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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Appln. No.	:	10/521,539	
Filed	:	January 14, 2005	Group Art Unit: 3654
Title	:	CONICAL SPRING BUFFER FOR AN ELEAVATOR	Examiner: Eric E. Pico
Docket No.	:	OT-5055	

PRE-APPEAL BRIEF REQUEST FOR REVIEW

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This request for review follows the Final Office Action mailed on January 18, 2007. Applicant requests review of the final rejection of the above-identified application. An Amendment After Final is being filed concurrently with this request, in which dependent claims 4 and 8-10 are amended to address the objection to the drawings and the rejections of claims 4 and 8-10 under 35 U.S.C. § 112. The following remarks are directed to the rejections of claims 1-10 under 35 U.S.C. § 103(a). Enclosed with this request is a Notice of Appeal and the appropriate fees.

In the Final Office Action mailed on January 18, 2007, claims 1-13, 5, 6, and 8-10 were rejected under 35 U.S.C. § 103(a) based upon U.S. Patent No. 568,345 ("Gilpin") in view of U.S. Patent No. 380,651 ("Fowler"); claim 4 was rejected under 35 U.S.C. § 103(a) over Gilpin in view of Fowler and further in view of U.S. Patent No. 190,291 ("Davis"); and claim 7 was rejected under 35 U.S.C. § 103(a) over Gilpin in view of Fowler and further in view of U.S. Patent No. 3,768,596 ("Solymos"). Claims 1-10, as amended by the concurrently filed Amendment After Final, are pending in this application.

The present invention relates to the use of a spring buffer placed at the extreme limit of travel of an elevator car or counterweight to prevent travel of the elevator car beyond its normal

range. As noted in the Background section of the application, these buffers have typically been made of helical springs or hydraulic dampers, which are disposed in the elevator pit at the lower end of the hoistway.

The present invention is an improved buffer that provides a sufficiently long stroke between the uncompressed and fully compressed states to decelerate the elevator car at the required rate, while reducing the overall buffer uncompressed height (paragraph 0005). The uncompressed height of the spring buffer is an important factor, because the spring buffer is located in the hoistway pit. The uncompressed height will affect the pit depth that is required, and therefore affects the cost of the elevator system. The spring buffer of the present invention is best shown in FIG. 2 of the application. The buffer is a conical coil spring that includes a spiral coil element having a series of coils, where the radius of the spring coil element decreases along the axis of the coil element. The lowermost coil section has the largest radius, while the uppermost coil section has the smallest radius. When the spiral coil is fully compressed, the coils on the spiral coil spring nest within one another to a substantially planar configuration, as illustrated in FIG. 3B.

As also can be seen in FIG. 2, the bottom (outermost) coil has its bottom surface 38 flattened, so that the lowermost coil tapers (gets progressively thicker) in the direction from the right side to the left side of FIG. 2. Similarly, the uppermost (innermost) coil also is tapered so that it has a flat top surface 36.

Between the uppermost (innermost) coil and the lowermost (outermost) coil, each of the coil sections has the same diameter or thickness. This provides greater stiffness or spring constant to the buffer than would be achieved if the coil sections had a thickness that became progressively smaller as the radius of the coils became smaller (as illustrated in Fowler).

Claim 1 reads as follows (italic emphasis added):

1. A buffer for an elevator system, the buffer comprising:

a conical coil spring,

wherein the buffer is configured to be disposed at one end of a hoistway of the elevator system for contacting a vertically moving member of said elevator system in the event of an abnormal overrun,

wherein the conical coil spring includes a spiral coil element that comprises a series of coils,

wherein a radius of the spiral coil element decreases along an axis of the conical coil spring such that if the spiral coil spring is fully compressed, the coils of the spiral coil spring are configured to be arranged in a substantially planar configuration, and

wherein a thickness of the coil element is substantially uniform between an outermost coil and an innermost coil.

The buffer defined in claim 1 is not taught or suggested by Gilpin, Fowler, Davis, or Solymos, or any combination of those references.

Gilpin shows a safety cushion or buffer for an elevator. Gilpin shows a structure that includes an airbag B, a bottom platform C on top of airbag B, inner three auxiliary platforms C', and a top platform C^2. Between each pair of platforms, a layer of coiled springs D or D' are shown. A total of four layers of coil springs are shown in Gilpin.

As noted in the Background section of the present application, buffers for elevators are known. The present invention defines a buffer using a conical spring of a design that provides the desired deceleration of the elevator car, while providing a substantially reduced overall uncompressed height of the buffer.

Gilpin, with its airbag, five platforms, and four layers of coil springs, is definitely not concerned with minimizing the uncompressed height of the buffer or the compressed height, and thus reducing the required pit depth. As acknowledged in the Office Action, Gilpin is silent (a) "concerning the spiral coil spring being fully compressed, the coils of the spiral coil spring are configured to be arranged in a substantially planar configuration" and; (b) regarding "a thickness of the coil element is substantially uniform between an outermost and an innermost coil." See Office Action at page 5.

The Office Action relies on Fowler to supply the teaching missing in Gilpin. Fowler describes a coiled spring in which the diameter of the spring wire decreases continuously from the outermost coil segment to the innermost coil segment. This can be seen in both FIGS. 1 and 2 of

Fowler. Fowler specifically teaches diminishing the diameter of the wire forming the spring from the larger end B to the smaller end A. Fowler states that drawing the steel of the wire down to a flat taper or wedge shape is an essential feature of the invention (lines 72-97), and the single claim of Fowler requires that the cylindrical rod decrease in diameter toward the apex of the spring.

Fowler is directed to coil spring in general, and does not mention elevators as an application. There is no suggestion found in Gilpin or Fowler to substitute the spring of Fowler for the springs of Gilpin, and then modify the Fowler spring, contrary to the teaching of Fowler, so that the coil segments between the outermost coil and the innermost coil have a substantially uniform thickness or diameter. The benefits of the present invention, to reduce the uncompressed height of an elevator buffer, is not found in either Gilpin or Fowler. If anything, Gilpin teaches away from the desirability of a minimum compressed height for a buffer by its use of an airbag together with four layers of coil springs.

When applying Fowler to cure the second of the aforementioned deficiencies of Gilpin, the Office Action stated: "while the preferred embodiment of Fowler et al. does show a non-uniform thickness between the outermost coil and an innermost coil, a statement indicating the desirability having a [non]-uniform thickness between the outermost coil and an innermost coil in no way criticizes, discredits, or otherwise discourages the solution of having a uniform thickness between the outermost coil and an innermost coil." *See* Office Action at p. 5. Even assuming, *arguendo*, that this statement is correct, the Examiner still must consider Fowler as a whole, including any provisions in it that teach away from its combination with a primary reference (in this case Gilpin). *See* M.P.E.P. § 2141(II)(b), 2141.02(VI).

In this case, to combine Fowler with Gilpin would require ignoring the explicit teachings in Fowler that teach away from using a uniform thickness. Specifically, the point of Fowler's invention is to achieve a spring that has a "superior" action in terms of ease and smoothness (*see* lines 53-56). Fowler achieves this "superior" action by varying both the thickness of the coil and the spacing between successive coils. Accordingly, if one were to ignore the non-uniform thickness teachings in Fowler and instead were to apply a uniform thickness to Fowler's coil, Fowler's device would be unsatisfactory for its intended purpose. As stated in M.P.E.P. § 2141.03(V): "If proposed modification would render the prior art invention being modified

unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." As a combination of Gilpin and Fowler would render Fowler unsatisfactory for its intended purpose and/or would require ignoring Fowler's teachings regarding the importance of a non-uniform thickness to achieve a "superior" spring action, Gilpin and Fowler cannot be properly combined under 35 U.S.C. § 103(a) to render claim 1 obvious. The present invention, as defined in independent claim 1, and dependent claims 2, 3, 5, 6, and 8-10 is neither taught nor suggested by Gilpin and Fowler.

Neither Davis nor Solymos provide the teaching that is missing from Gilpin and Fowler. Davis shows a cylindrical helical spring, which will not collapse to a substantially flat configuration. Thus Davis does not achieve any of the objectives of the present invention. Solymos shows an elevator system with buffers 21 and 23 for the elevator car 1 and counterweight 7, respectively. It does not, however, provide any detail as to the structure of buffers 21 and 23.

In conclusion, the rejection of claims 1-10 under 35 U.S.C. § 103(a) should be reversed. The present invention as defined in claims 1-10 is neither taught nor suggested by Gilpin, Fowler, Davis, Solymos, or any combination of those four references.

As to the objections to the drawings and the rejections under 35 U.S.C. § 112, the concurrently filed Amendment addresses the issues and renders the objections and rejections moot. This application is now in condition for allowance. Reconsideration and notice to that effect are respectfully requested.

Respectfully submitted,

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Date: April 18, 2007

By: _____

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